



NCAR

# Update on NCAR/NSF Aviation Status



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# Full pylon certification, achieved



Multiple configuration

Large pod payload  
development next

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# “HAIS” instruments now on line

Instrument	PI	Organization	Available
<b>Vertical Cavity Surface Emitting Laser Hygrometer (VCSEL)</b> - Measurements of water vapor concentration at a minimum rate of 25 sps over the entire range of the troposphere and lower stratosphere.	Zondlo	SW Sciences	Apr-08
<b>Small Ice Detector, Version 2 (SID-2H)</b> - A particle light-scattering instrument for measuring size distributions of particles in the 1 to 70 $\mu\text{m}$ size range and for discriminating between ice crystals and supercooled water droplets in mixed phase clouds.	Heysfield	UCAR / NCAR	Aug-07
<b>HIAPER Atmospheric Radiation Package (HARP)</b> - Spectrally-resolved actinic flux measurements, spectroradiometric actinic flux and irradiance measurements.	Shetter	UCAR / NCAR	Mar-08
<b>Quantum Cascade Laser Spectrometer for HIAPER</b> - Concentration data versus time for $\text{CO}_2$ , $\text{CH}_4$ , and $\text{CO}$ ( $\text{N}_2\text{O}$ optional).	Wofsy	Harvard	Sep-08
<b>Advanced Whole Air Sampler (AWAS)</b> - Collection of ambient air samples autonomously for subsequent analysis of trace gas chemical and/or isotopic composition.	Atlas	U. Miami	Mar-08
<b>Autonomous Airborne Ozone Photometer</b> - Quantification of ozone mixing ratios at 1 sps using the method of UV absorption.	Rawlins	PSI, Inc	Sep-07
<b>Microwave Temperature Profiler (MTP)</b> - Measurements of brightness temperature at three frequencies between 55.5 and 58.8 GHz to be used to retrieve a temperature profile about the aircraft's flight altitude.	Mahoney	JPL/Caltech	Mar-08
<b>Chemical Ionization Mass Spectrometer (CIMS)</b> - Measurements of nitric acid, pernitric acid, and sulfur dioxide in standard CIMS negative-ion mode. Measurements of organics such as methanol, acetaldehyde, acetonitrile, and acetone in CIMS positive-ion mode.	Huey	Georgia Tech	Apr-08
<b>Fast Ozone Instrument</b> - Quantification of ozone mixing ratios at 5 sps using the method of chemiluminescent reaction with nitric oxide.	Campos	UCAR / NCAR	Mar-08
<b>High Spectral Resolution Lidar</b> - Calibrated vertical cross sections of cloud and aerosol optical depth, backscatter cross section, and depolarization.	Eloranta	U. Wisconsin	Sep-08
<b>2D-S (Stereo) and Cloud Particle Imager (CPI)</b> - CPI portion to provide 8-bit (gray level) images of particles, and 2D-S portion of probe to provide two different (orthogonal) views of particles.	Lawson	SPEC, Inc	Jun-08
<b>GPS Multistatic and Occultation Instrument</b> - Measurements of water vapor distribution in the troposphere, ocean surface roughness, and soil moisture.	Garrison	Purdue	Jan-09
<b>Trace Organic Gas Analyzer (TOGA)</b> - In situ measurements of oxygenated volatile organic compounds (OVOCs), non-methane hydrocarbons (NMHSs), and halocarbons.	Apel	UCAR / NCAR	Feb-09
<b>Time of Flight Aerosol Mass Spectrometer (ToF-AMS)</b> - Measurements of total PM1 mass concentrations for non-refractory (NR) species, size-resolved PM1 composition for NR species, single particle composition, light scattering signal intensity for particles above 250 nm correlated with mass spectral signal, and surrogate non-sphericity.	Jimenez	U. Colorado	Feb-09

# Projects: 2011

2011 Planning Chart													8/24/10
NCAR / EOL Research Aviation Facility													
Aircraft	Project Location PI	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>C130</b>													
Request	IDEAS-IV (JeffCO) Stith										1-----	.....1 21 28	
Approved AJS	ICE-T (St Croix) Heymsfield					1-----	-----	.....1 31	---15				
	Maintenance Schedule	fuel system AD+	fuel system AD+	Wing re-wire ←	PKG 5	PKG 6			PKG 7				PKG 8
<b>GV</b>													
Approved Pavel	HIPPO (Global) Wofsy					24--	2 14 31	1 9 16	1 15 31	1 9 17			
Request	DC-3: test (JeffCO) Cantrell				7--	.....1 15 22							
Request	TORERO (Peru) Volkamer											1-----	-----
Request	PREDICT-II (Darwin) Holland											1-----	-----
	Maintenance Schedule									ANNUAL (6 weeks)	~~~~~	~~~~~>	
<b>P3</b>													

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# C130 Avionics Upgrade





# NCAR Other Recent Developments

- Feasibility study of CTV
- Laser air motion system tested, 3D version in development stage
- New EOL Director!





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United States Antarctic Program – USAP – operates a number of skied LC-130 aircraft in Antarctica. Primarily used for transportation and logistics during the austral summer, their use as a research platform presents the challenge of preserving dual use.





NO mods required to a/c. Articulating Arm can be used to mount pods, instruments, etc. The whole assembly is from a door and takes about 2 hours to integrate.







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Window is part of articulating arm assembly

